Dahlgren Naval Surface Warfare Center
Dahlgren, Virginia

Engineering Field Division/Activity:	EFACHES
Major Claimant:	COMNAVSEASYSCOM
Size:	Main Site: 2,677 Acres; Explosive Experimental Area: 1,614 Acres
Funding to Date:	$11,088,000
Estimated Funding to Complete:	$91,482,000
Base Mission:	Proofs and tests Department of the Navy ordnance
Contaminants:	Cleaning solvents, explosive residues, heavy metals, low-level radioactive materials, mercury, PCBs, pesticides

Number of Sites:		**Relative Risk Ranking of Sites:**			
CERCLA:	58	**High:**	16	**Not Evaluated:**	24
RCRA Corrective Action:	0	**Medium:**	4	**Response Complete:**	12
RCRA UST:	0	**Low:**	2	**Total Sites:**	58
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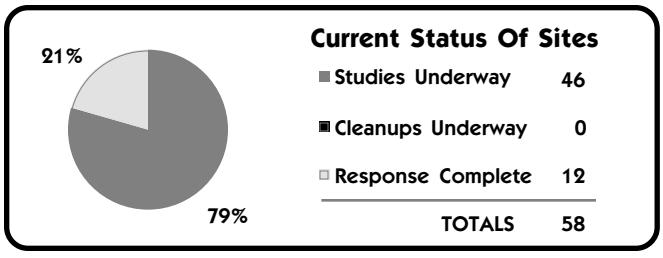
NPL

EXECUTIVE SUMMARY

Dahlgren Naval Surface Warfare Center (NSWC) is located in King George County, on the Virginia shore of the Potomac River, 28 miles east of Fredericksburg and 53 miles south of Washington, D.C. NSWC has carried out an extensive mission in the proof and testing of naval ordnance since 1918. Proof and testing have included work in the areas of guns of all sizes, aircraft bombs, rockets and projectiles. Limited work has been done with chemical and radiological warfare agents. A number of non-ordnance operations have been carried out, including metal plating, degreasing and metal treating, painting and carpentry, machining, metal trades, vehicle and locomotive maintenance, battery service, printing, electrical work, steam production, vehicle washing, water treatment, photography and pesticide mixing and application. Low levels radiological operations conducted included atomic weaponry development, use of depleted uranium in 20 mm rounds and use of thorium-magnesium in special weapons development. Current operations include pollution prevention technologies to prevent further contamination. The primary Areas of Concern (AOCs) that caused National Priorities List (NPL) placement, are mercury contamination at Hideaway Pond (Site 10), oil containing the chemical additive PCB from Transformer Draining (Site 19) and pesticides at the Pesticide Rinse Area (Site 25). Dahlgren NSWC is under a Federal Facility Agreement (FFA) with the EPA Region III and the Commonwealth of Virginia, which was signed in September 1994.

NSWC is surrounded by low-density rural residential and agricultural areas. NSWC is bounded on the north by Route 301 and on the east by the Potomac River. The Main Site is separated from the Explosive Experimental Area (EEA) by Upper Machodoc Creek, which drains the EEA. Both Gambo and Williams Creeks collect the surface runoff from the Main Site. All waterways drain to the Potomac River. Approximately 40 percent of the Main Site is composed of residential/developed areas. The northern and western portions of the site contain large blocks of mature forest. Forests in the central and eastern areas tend to be younger, with large areas of pine plantations. Over 60 percent of the EEA is hardwood and pine forest, with only eight percent of the area residential/developed. There are numerous marshes in the EEA. Three freshwater water bodies also exist on-site. Approximately 326 acres are wetlands. There are large wildlife populations in the forested areas and the wetlands. The main potential contaminant migration pathway is via surface water runoff. The groundwater aquifer is very deep and protected by impermeable layers.



A Restoration Advisory Board (RAB) was started in FY95. A Community Relations Plan (CRP) was updated in October 1995 and receives periodic updates. In FY91, an Administrative Record and an Information Repository were established at local libraries.

Currently, 46 sites are in a study phase. Ten sites are underway in Site Inspections (SIs), while eleven sites have Remedial Investigations/ Feasibility Studies (RI/FSs) ongoing. Eight sites are to receive FY96 funding for SIs. The remaining 17 sites are awaiting funding to complete the study phase. Response is complete at 12 sites.

Major successes in the cleanup program at NSWC include: removal of soil contaminated by the chemical additive PCB at Site 19; removal of petroleum contaminated soil at the Tar Tank Storage Area Solid Waste Management Unit (SWMU) #67; use of immunoassay field screening tests to reduce costs and obtain quick turnaround times and development of Master Work Plans to speed up review time and save money on work plans.

A Site Screening Process (SSP) was developed and initiated as part of the FFA. The SSP should help to streamline the study phase process by performing more flexible study investigations.

NSWC initiated a joint venture with the U.S. Naval Academy to perform a treatability study on two Depleted Uranium sites that contain contaminated soils. The treatability study is part of an overall effort to look into innovative technologies that can save money and reduce risks to the environment.

DAHLGREN NSWC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The major hydrological characteristic of NSWC is an artesian aquifer approximately 600 to 800 feet below the surface. In general, the impermeable nature of the surface geology minimizes potential downward migration of surface pollutants. Consequently, pollutant migration pathways are largely restricted to near surface migration and surface runoff. The site geology serves to minimize the possibility of contamination of the deep on-site aquifer that serves as a drinking water source for base residents and workers. Most of the Main Site falls into the Gambo Creek watershed. The remainder of the surface runoff drains into peripheral drainage swales which flow directly into Upper Machodoc Creek and eventually into the Potomac River. Surface runoff from the Explosive Experimental Area (EEA) will either drain into Black Marsh to the east or the Upper Machodoc Creek, which borders the west and northern sides. Three freshwater bodies exist on NSWC: Upper Gambo Creek, Hideaway Pond and Cooling Pond. Approximately 326 acres of NSWC are wetlands.

The U.S. Geological Survey (USGS) has performed hydrogeologic studies on the Main site and the EEA to better define the hydrology at the installation.

NATURAL RESOURCES - A large number of mammalian, avian and herpetofaunal species were observed or expected at NSWC. The only immediately evident area that may be potentially affected by contamination from waste disposal practices is the Hideaway Pond drainage area. Fish tissue samples indicate mercury levels exceeding EPA maximum contaminant limits. Investigations to identify the potential sources of mercury in Hideaway Pond have focused on Site 17, the 1400 Area Landfill. The Bald Eagle is the only known endangered species among the flora and fauna found at the activity.

RISK - A Baseline Risk Assessment, both ecological and human health, has been performed for Sites 2, 9, 10, 12, 17, 19, 25 and 29 following EPA guidance. The DOD's Relative Risk Ranking System has ranked 22 sites. Sixteen sites resulted in "high" risk levels primarily due to known soil and groundwater contamination and identified migration pathways to nearby wetlands and ecological resources. The Agency for Toxic Substance and Disease Register (ATSDR) performed a Site Scoping visit on 10 December 1992. This report was received on 19 May 1994.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - In October 1992, NSWC was placed on the National Priorities List (NPL) with a Hazard Ranking System (HRS) score of 50.26. Three sites specifically drove the listing: Hideaway Pond (Site 10), the Pesticide Rinse Area (Site 25) and the Transformer Draining Area (Site 19) due to the possibility of releases from these sites that could affect the Potomoc River, Gambo Creek, associated wetlands and local groundwater aquifers that are used for drinking water.

LEGAL AGREEMENTS - The Department of the Navy (DON), EPA and the Commonwealth of Virginia has negotiated the Federal Facility Agreement (FFA) which was signed in September 1994. A Site Management Plan (SMP), which is updated annually, contains the investigation and cleanup schedules for sites included in the FFA.

PARTNERING - The installation holds frequent meetings and conference calls with representatives of EPA and the Virginia Department of Environmental Quality and other regulatory agencies to prioritize sites and incorporate comments into the SMP.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in FY92. The TRC was converted to a Restoration Advisory Board (RAB) in October 1994. The RAB meets periodically to review project plans and progress of investigations and cleanup. As a result of these meetings, many suggestions from the community have been incorporated into the cleanup program.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was established in August 1992 and was updated in October 1995.

INFORMATION REPOSITORY - An Administrative Record was established at the NSWC General Library and an Information Repository at the Smoot Memorial Library in FY91.

DAHLGREN NSWC
HISTORICAL PROGRESS

FY83

Sites 1-36 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), identified 36 potentially contaminated sites in May 1983 at NSWC. All but 12 of the sites were recommended for further study.

FY86

Sites 9, 10, 12, 17, 19 and 25 - The Confirmation Study (CS), equivalent to a Site Inspection (SI), was completed.
Site 37 - A new site, Lead Contaminated Sand from an old firing range, was identified by the activity.

FY92

Sites 2, 9, 10, 12, 17, 19, 25, 29 and 37 - The Remedial Investigation/Feasibility Study (RI/FS) was awarded.
Site 34 - A removal action involving soil and concrete sampling, excavation and disposal was completed in May 1992. No further action is anticipated at this site.

FY93

SWMUs and AOCs - During the SI phase, a RCRA Facility Assessment (RFA) was completed in December 1992 by EPA and identified over 100 Solid Waste Management Units (SWMUs). The Department of the Navy (DON) and EPA did an initial screening and six Areas of Concern (AOCs) and 31 SWMUs were added to the Installation Restoration Program (IRP). An RFA was completed in December 1992. However, all the AOCs and SWMUs were incorporated into the FFA for action under CERCLA.

FY94

Sites 19, 38, 48, and SWMUs 10, 18, 68 and 85 - Removal actions were initiated at Sites 19 and 36. Interim Remedial Actions/Remedial Actions (IRAs/RAs) were completed in FY94 including: a Tar Tank Storage Area (Site 48) containing petroleum contaminated soil was removed. Welding slag was removed from the ground at SWMU 10. A cover was placed on SWMU 18 (Incinerator Ash Dumpster). A waste drum was removed from SWMU 68 and contractor materials and debris was removed from SWMU 85. NFA is anticipated at these sites.

PROGRESS DURING FISCAL YEAR 1995

FY95

Sites 36 and 39 - Started an Engineering Evaluation/Cost Analysis (EE/CA) and a joint venture with the U.S. Naval Academy to perform a treatability study on two Depleted Uranium sites (Sites 36 and 49) which contain soils contaminated with depleted uranium.

Sites 6, 21, 22, 31, 32, 45, 46, 50, 51 and 53 - The SIs were still underway and are expected to be completed in FY96.
Site 19 - Completed a removal action at the Transformer Draining Area contaminated with the chemical additive PCB. Field Screening immunoassay tests were used to determine the extent of PCB contamination and reduce laboratory and mobilization costs.

PLANS FOR FISCAL YEARS 1996 AND 1997

FY96

Sites 6, 21, 22, 31, 32, 45, 46, 50, 51 and 53 - SIs are expected to be completed.
Sites 2, 9, 10, 12, 17, 19, 25 and 29 - RI/FSs are expected to be completed.
Sites 13, 20, 23, 37, 54-57 - SIs are expected to be funded.
Sites 6, 21, 22, 31, 32, 45, 46, 50, 51 and 53 - These sites are expected to be carried into Remedial Investigations (RIs) and removal actions are planned. The Ecological Assessment for Gambo Creek is expected to be completed.

FY97

Sites 2, 9, 10, 12, 17, 19, 25 and 29 - RI/FSs are expected to be completed.
Site 25 - A Benchscale Treatability Study for the Pesticide Rinse Area should be completed.
Sites 44 and 58 - RIs are to be completed.
Sites 2, 9, 10, 12, 17, 25 and 29 - Remedial Designs (RDs) are expected to be completed and Remedial Actions (RAs) are planned to begin.
Sites 13, 20, 23, 37 and 54-57 - These sites are expected to enter the RI phase and removal actions are planned.

DAHLGREN NSWC
PROGRESS AND PLANS

CERCLA	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
PA	35							
SI	6		10	2	8			16
RI/FS				11	4	10		20
RD				1	7		11	25
RA				1	1	5	3	35
IRA	1(1)		2(2)					
RC	12		1	1	1	5	3	35
Cumulative Response Complete	21%		22%	24%	26%	34%	40%	100%